



THE PROVINCE OF ALBERTA
The Public Inquiries Act

REPORT OF MR. JUSTICE A. F. EWING

The Commissioner appointed to inquire
into a disaster which occurred at the
mine of Brazeau Collieries Limited at
Nordegg, Alberta, on October 31st, A.D.
1941.

UNIVERSITY OF ALBERTA

APR - 5 2000

GOVERNMENT
PUBLICATIONS

TN
313
E95
1941
folio
c.1

BARD



EX LIBRIS
UNIVERSITATIS
ALBERTENSIS

INDEX

	<u>PAGE</u>
General description of the mine	2
Gas conditions in the mine	3
Ventilation	13
Shortage of brattice and tubing	15
Brushing gas	17
Shot-firing	17
Causes of explosion	20
Responsibility for cause of disaster	22
Responsibility of agent	22
Inspection by officers of Department	24
Explosions	26
Recommendations	26

TO THE LIEUTENANT GOVERNOR IN COUNCIL

EDMONTON, ALBERTA.

By a Commission dated December 16th, 1941, and issued pursuant to The Public Inquiries Act, being Chapter 26 of the Revised Statutes of Alberta, 1922, I was appointed to conduct an inquiry into a disaster whereby twenty-nine (29) men lost their lives on October 31st, 1941, in a coal mine known as Number 3 Mine, owned and operated by Brazeau Collieries Limited at Nordegg, Alberta. I am directed by the Commission to ascertain, as far as possible, the cause of the said disaster and to make such recommendations as I may, in my discretion, consider proper.

The Commission held meetings at Nordegg commencing on January 6th, 1942, and continuing until January 16th, 1942. These sittings were announced in advance and a general invitation was extended to everyone who had any relevant information to come forward and give evidence. This invitation was repeated at the opening of the sittings and some seventy-five (75) witnesses in all gave evidence. Much interest was manifested by the people of Nordegg in the sittings and all the sittings were largely attended. The following counsel were present on behalf of their respective clients:

- D. B. MacKenzie, Esq., Counsel for the Commission.
- A. L. Smith, Esq., K.C., Counsel for the United Mine Workers of America.
- M. M. Porter, Esq., K.C., Counsel for Brazeau Collieries Limited.
- J. R. McClure, Esq., K.C., Counsel for officials of the Company engaged in the Mine.
- C. M. Macleod, Esq., K.C., Counsel for the Department of Lands and Mines.

Angus Morrison, Esq., M.L.A., an official of the United Mine Workers of America, also appeared on behalf of the miners interested in the investigation. On January 12th Mr. McClure explained to the Commission his position as counsel and asked leave to retire from the investigation. This leave was granted and Mr. McClure accordingly retired.

It was abundantly clear from the evidence, and was admitted by all parties present that the disaster resulted from an explosion of gas in the mine. As the hearing progressed all parties concurred in making certain admissions as follows:-

1. That the explosion was not a coal dust explosion.
2. That the explosion was not caused by defective powder.
3. That the explosion was not caused by any defects in the electrical apparatus used in the mine.

Added to these, or perhaps as part of them, was the further admission by all parties that the explosion did not result from any defect in the safety lamp carried by Pitboss Armstrong who was killed as a result of the explosion and whose electric lamp was later found, still burning, near his body. As counsel present represented, for practical purposes, all possible divergent interests, I feel quite justified in accepting these admissions as facts in the inquiry. It might, however, be added that although no further direct evidence was given as to the matters so admitted, the incidental evidence would warrant the conclusion that these admissions were amply justified.

GENERAL DESCRIPTION OF THE MINE

Brazeau Collieries Limited own and operate three mines at Nordegg, but we are concerned almost altogether with No. 3 Seam or No. 3 Mine, as it was in the workings of this seam that the explosion occurred. Some effort was made to compare mining methods and precautions in No. 3 Seam with those in vogue in other mines of the Company at Nordegg.

No. 3 Seam might be described by a layman as a huge slab of coal varying in thickness from 12 to 20 feet and dipping from the surface at an inclination of 12 degrees. Two slopes are driven down through this seam, known as No. 1 Slope and No. 2 Slope. These slopes serve as entries to the mine and through them the coal is brought to the surface. We are concerned here only with No. 1 Slope. From this slope, levels are driven off to the right and left at more or less regular intervals into the seam. Those driven to the right as one goes down the slope; are called right levels, and those to the left are called left levels. These levels are numbered consecutively from the top and are almost level, being driven on a slightly rising gradient to facilitate haulage. From each level passages or rooms are driven upward, on the same inclination as the seam, to the level next above. Between these rooms, passages called cross-cuts are driven at more or less regular intervals to facilitate ventilation. The masses of coal left between the rooms are called pillars. Although not connected with the purposes of this investigation, it may be said here that coal from these levels, rooms and cross-cuts constitutes only a small percentage of the total coal in the area through which they run. All these workings are preparatory to taking out the main body of coal contained in the pillars, but with this process we are not here concerned.

At the time of the explosion, No 1 Slope had been driven down for a distance of 2,600 feet and from this slope, levels ran to the right and to the left, one known as the 4th Right Level and the other as the 4th Left level. This 4th Left Level had, at the time of the explosion, been driven a distance of 3,900 feet from the slope. At regular intervals rooms had been driven up from the 4th Left Level to the 3rd Left Level as far as the 3rd Left level extended. These rooms were numbered consecutively from the slope, the last room connecting the 4th Left Level with the 3rd Left Level being Room No. 31. The 4th Left Level extended some 900 feet beyond Room 31. From Room 31 to Room 36 the rooms do not connect with a level above, but are connected with each other by cross-cuts. Beyond Room 36 the 4th Left Level continues for a distance of about 400 feet with no rooms opening off it, except Room 37 which had not yet been connected with Room 36 by cross-cut. From the bottom of the No. 1 Slope another level had been driven parallel to and about 150 feet below the 4th Left Level. This level is known as the 4th Left Water Level. It is the lowest level, and as the name indicates, it is constructed for drainage purposes. All the water which collects in this part of the mine flows down to this level and as it is built on a slight gradient the water then runs along this level to the slope where the pumps are situated. Rooms were driven from the 4th Left Water Level to the 4th Left Level, but these rooms are farther apart being about 150 feet apart as against about 75 feet between the rooms on the other side of the 4th Left Level. Prior to the explosion Room 12 had been completed between the 4th Left Water Level and the 4th Left Level and Room 13 had been started at the 4th Left Water Level and driven up about 40 feet or approximately one-third of the distance separating these two levels. The evidence establishes,

and all parties agree, that the explosion took place in this uncompleted Room No. 13, which runs up from the 4th Left Water Level.

It is difficult to form a mental picture of this area without the aid of plans. Three plans were filed. Exhibit 4 is a plan of No. 3 Seam and shows the system of ventilation. Exhibit 5 is an electrical plan and shows the position of the fixed electrical apparatus of the mine. As by common consent the disaster was not due to any defects in the electrical apparatus, it will not be necessary to refer to that apparatus nor to Exhibit 5.

Exhibit 6 is a cartoon plan on a larger scale and shows the area affected by the explosion including the 4th Left Water Level and the 4th Left Level. This plan is more illuminating to the non-professional observer as it is not complicated and it shows:-

- a. The area affected by the explosion on a scale of one inch to 50 feet.
- b. The location of the human bodies as found after the explosion.
- c. The location of the dead horses and the mine cars as found after the explosion.
- d. The mine caves which resulted from the explosion.

A copy of Exhibit 6 much reduced in size, has been prepared and is to be found at the end of this report.

GAS CONDITIONS IN THE MINE

If gas exists in a mine, then gas conditions and ventilation methods are closely associated. However, instead of trying to deal with them together it seems better to consider gas conditions first.

The word "brattice" should be explained here because it is a word commonly used in the mining industry and frequently used in this report. It refers to a partition used for ventilating purposes. The partition divides a room or a level into two channels, so that the air current passes along one side of the partition to the end of the partition, which is close to the face, then around the end and back along the other side. The term "brattice" is applied equally to the partition itself and to the coarse tarred cloth out of which it is made.

There is abundant evidence as to the "gassy" condition of the mine both at the point of explosion and in the nearby areas. A large number of witnesses testified to facts establishing this condition. It will be necessary to review most of this evidence, as each witness seemed to make, in most cases, some special contribution to the mass of evidence.

Daniel Jones has been mining for twenty-eight years, of which fourteen years were spent at the Brazeau Mines. On October 30th, 1941, he and his partner Dimirco, both of whom held "A" Certificates, went to work at Room 13 on the 4:00 P.M. shift. This was the place where the explosion took place the next morning at about 9:00 A.M. At this time Room 13 was driven only about 40 feet and it was ventilated mainly by an eight inch vent tube from an auxiliary fan placed on the 4th Left Water Level at Room 12. This tube ran along the water level from Room 12 and a branch tube ran off it into Room 13. There was no brattice in Room 13. When Jones entered Room 13 he noticed gas near the roof but it did not make him dizzy at first. He and

his partner proceeded to drill the holes into the face and insert the powder and detonators and tamped the powder in with "black-jack" preparatory to firing. (This "blackjack" is a mixture of dirt with an inferior type of coal and is apparently used generally in the Brazeau Mine. It is usually found in a layer conveniently at hand.) Then Mr. Whyte, the Fireboss, came along and asked if they were ready to fire. On being told they were ready, the cable was coupled and the shots fired. Whyte had a safety lamp, but did not test for gas, neither before firing the first shot, nor between the shots, nor after all the shots were fired. He did not go up to the face at any time.

Jones and Dimirco waited till the smoke cleared away and then went up to the face and found gas. They did not get dizzy while on the floor, but when on the platform they felt it. Methane gas is lighter than air and will rise to the roof and will extend downwards only if, and as, the quantity increases. Several times they went up on the platform and got dizzy and had to get down. They decided about 9:30 P.M. to quit on account of the gas. They reported to Mr. Parker, who was then Pitboss, and told him that more vent tubing was needed in Room 13. Parker said jokingly, "Where the hell are you going to get it?" They went to the lamp house to turn in their lamps as usual and on being asked the reason for leaving, Jones answered, "Too much gas." Earlier in the week, Jones and Dimirco had trouble with gas in Room 13 and had asked Whyte for more tubing, and Whyte said he would try to get it. Jones had also "brushed" gas in this room during the week preceding the explosion. "Brushing" is a method frequently used in this mine. It consists in waving a piece of cloth (usually brattice) in the space where gas has accumulated. This process disturbs and to some extent scatters the gas so that some of it will be drawn into the air currents of the ventilating system and thus be removed. When brushing is done on the order, or with the consent of a fireboss or a pitboss, the miner doing the work is paid for his time by the Company. If, however, he does the brushing on his own account he is not paid for his work. While brushing serves some purpose in stirring up and scattering the gas it is a haphazard and temporizing kind of process, and its very necessity ought to be a warning to all concerned of the presence of gas in dangerous quantities.

Jones says that on a previous occasion Mr. Minue, a Fireboss, had told him to brush gas and that he was paid 72 cents per hour by the Company.

Jones further says that on October 30th, 1941, he had heard a small "blower" of gas. A "blower" is apparently a term used to designate the escape of gas which has been stored up under pressure in some enclosed space in the solid coal and which may be released by some disturbance or through some aperture caused by mining. The escaping gas causes a hissing or whistling sound and this sound is treated as a warning of the presence of gas. Jones does not say, however, that he communicated this fact to any of the mine officials.

Dimirco corroborates Jones in practically all the latter's statements. Dimirco says that he went home early on October 30th on account of gas. He says it was very gassy near the face, particularly at the top. He says that the tubing went into Room 13 only 15 or 20 feet, while the distance to the face was about 40 feet. He says that there should have been more tubing, that he told Whyte, the Fireboss, that there should be more tubing and Whyte said he would fix it up. He also heard Jones tell Parker that there should be more tubing. I have

dwelt at some length on the evidence of Jones and Dimirco because they were working in the very room where, some 10 or 12 hours later, a shot fired by Pitboss Jack Armstrong resulted in an explosion which killed not only Armstrong and the morning shift working at Room 13, but 26 other men in various parts of the mine.

Isador Zwarich worked about the mine cleaning away mud and helping tracklayers and timbermen. In July or August, 1941, he was sent by the pitboss to Room 32 on the 4th Left Level to brush gas. While on the bench, he was overcome by gas and fell off the bench. At another time in Room 35 he was overcome by gas and fell off a ladder at a time when his head was only eight or 10 feet from the floor. He was overcome a third time and became known as the "Human Safety Lamp". On one of these occasions, Pitboss Armstrong, on learning that Zwarich had been overcome by gas, told him to be careful.

Alphonse Dragani is a miner who has worked in mines at Nordegg since 1927. On one occasion he had to go home on account of gas. He tells of another occasion on which he was working at the face when a young fellow was brushing gas. This young fellow got up on the platform and being overcome by gas, fell down on Dragani and knocked him down.

John Bozak worked at Brazeau Mines at the end of October 1941 and was working on 4th Left Level mainly at brushing gas. He took his instructions from Armstrong and when any miner made a complaint about gas, he and his partner would go and brush the place out. He says he did this at least 150 times.

Vincent Mrstyk worked as a miner in the 4th Left Water Level and 4th Left Level for about two years and up to about three months before the explosion. He ran into gas in these areas several times. The gas made him dizzy and weak in the legs and arms. Sometimes he had to go home on account of gas and on these occasions he reported the presence of gas to the man in charge of the lamp house. Once he became unconscious and fell from the bench and when he recovered he found himself lying on the floor. He says that if he met anyone about the mine he would tell him about the presence of gas. He remembers telling Jack Armstrong twice about gas. He says he mentioned gas to someone two or three times a week. He further says he was moved from one place to another place eight or nine times on account of gas.

John Janigo was working in the 4th Right Water Level in Room 9. He found gas there and complained to Armstrong. This was one or two weeks before the explosion. The gas made him weak, dizzy and tired. He also mentioned gas to O'Neill and Whyte, both of whom were firebosses. On one occasion Mr. John Shanks, the General Manager, took his partner and him out of Room 9 because the place was not fit to work in, and put them to work at Room 11. Mr. Stewart, the Mine Manager, came along and asked them what they were doing there. They said that Mr. Shanks had put them there. Mr. Stewart then said that it would be far better if Mr. Shanks put in some tubes and brattice.

Angelo Romanzin was working at the face of the 4th Left Water Level on October 30th, i.e. the day before the explosion. The face of the level is about 125 feet from Room 13 where the explosion occurred. On previous days he had encountered gas and had complained to Pitbosses Armstrong and Parker and to Firebosses Whyte and O'Neill. On the day before the accident, the tubing was back 40 to 50 feet from the face. Nevertheless, Fireboss Whyte fired three shots on that day with-

out testing for gas at the face either before or after firing.

James Hereford went to work in this mine on September 26th, 1941, with John China who was Boss Timberman. About a week later, a miner named Alex Pastushak, who was later killed in the explosion, came to him and asked him to brush gas. He did not know how to brush gas, but Alex took him to Room 33, 4th Left Level, and a miner showed him how to brush. He brushed the gas to the apparent satisfaction of the miners and from then on he was brushing gas almost daily. Most of the brushing was done on the 4th Left Level. On the day before Thanksgiving Day, 1941, Pitboss Armstrong sent him to brush gas at Room 10 on the 4th Right Level. He got up on the platform which was about 13 feet high; while there he got weak and dizzy and the miners dragged him out. After he recovered Pitboss Parker, (then only a fireboss) came and Hereford informed Parker that he had been knocked out by gas. Parker told him to be careful. Hereford then went back and brushed out the room. Later in the same day, he again brushed it out during the same shift.

Lawrence Shaw and his partner were working in the cross-cut from Room 37 on the 4th Left Level on the afternoon shift a few hours previous to the accident. While driving Room 37 he encountered "lots of gas". There was much brushing of gas. Sometimes this was authorized by the pitboss and paid for by the Company. On one occasion Shaw was helping his partner get up on the bench when his partner suddenly collapsed and fell down on Shaw. He was unconscious but on being taken out he recovered. Shaw reported this incident to Pitboss Armstrong. Shaw says the firebosses never tested the face for gas either before or after firing. On one occasion, while working in Room 37, Shaw had to go home on account of gas. He reported at the lamp house on the way out that he was leaving early on account of gas. He did not ask for a book in which he might write his report as he was not aware of the existence of any such book.

George Esopita says that in September and October preceding the accident, while he was working in the 4th Left Level district, he went home about five times on account of gas, and that each time he reported the presence of gas to the fireboss and to the lampman.

Dan Stefaniuk was working on the 4th Left Level on October 30th on the afternoon shift. This was only a few hours before the explosion. He says there was gas on the bench and that it was quite bad. He says he told Fireboss Whyte about the gas, but the latter did not say anything and apparently 'did not do anything.

Henry Westcott has spent 34 years in coal mining. He began mining in South Wales and since then has had experience in Virginia, Pennsylvania, Saskatchewan and Alberta. He worked in the Brazeau Mine for four months ending September 27th, 1941. He was engaged as fireboss, but worked under Firebosses Whyte and Minue. His duties were to fire shots, look after drivers and keep things going. On the first night he found gas on the 4th Left Level. He says it was not too bad for the men working because the gas was at the roof. The gas was very noticeable four feet from the roof. An employee named "Soupie" was with him, to show him around, and when he found this gas he asked Soupie if they fired in this kind of gas. Soupie replied, "This is nothing. You will get a lot worse than this." There was enough gas at the roof to extinguish the lamp so Westcott got a piece of brattice and tried to brush the gas

away. Westcott says he felt that he had to fire the shot or quit and go home. He decided to fire the shots, which he did. After that gas conditions in the mine remained about the same, sometimes better, sometimes worse, depending upon how work in the cross-cuts was advancing. He never talked to Mine Manager Stewart about gas conditions because Whyte and Minue were his immediate superiors and he did not like going over their heads. But whenever a place was getting bad he spoke to his superiors about it. Westcott says he knew the gas conditions were dangerous and that he fired the shots knowing it was dangerous. He knew that firing these shots was a breach of his duty, but he had talked to the miners and they all thought it was all right to fire the shots. Moreover, he says he knew what the result would be if he refused to fire the shots. Before coming to Nordegg he was broke and out of a job. He continued to fire shots until he left on September 27th. He left on that date because he was not feeling well, but he says he decided to quit because he did not like gas conditions in the mine. About a month later the disastrous explosion occurred.

Many miners testified to similar gas conditions in the right level of No.3 Seam, but I have referred only slightly to them, partly because such reference would amount merely to repetition and partly because I think it wise to confine our attention largely, if not wholly, to the area in which the explosion took place and in which its effects were mainly felt.

It is necessary next to examine the evidence of the officers of the mine as to gas conditions. In doing so I shall deal here only with what seem to be important parts of the evidence so given, and shall reserve my comments thereon until later in this report.

Gordon B. Minue.

Mr. Minue has worked as a miner at Nordegg for 22 years, during 12 years of which he has been a fireboss. He was on duty on the night of October 30th, going off duty on the morning of October 31st about 8:00 A.M. Two matters at least in Mr. Minue's evidence are worthy of close attention. In the first place, the Examiners' Report Book was identified by him and put in as Exhibit 18. Section 127 of The Mines Act reads as follows:

"127. In every mine in which inflammable gas has been found within the preceding twelve months, an examiner or examiners appointed for that purpose shall inspect with a locked flame type safety lamp that part of the mine being or intended to be worked and the roadways leading thereto within three hours before the time of each shift commencing work; and he shall make a true report to the manager or overman, at the time in charge of the mine, of the condition thereof as far as safety and ventilation is concerned, and every such report shall be truly recorded without delay in a book which shall be kept at the mine for that purpose and shall be signed by the person making the inspection and a copy of such report shall be posted immediately in a conspicuous place at the mine,....."

Exhibit 18 is the Report Book kept in pursuance of Section 127. This book covers a period from October 11th, 1941 to November 9th, 1941. Each report takes the form of a certificate, which is as follows:

"I hereby certify that I have inspected every part of this District being worked or intended to be worked and the roadways leading thereto in accordance with the provisions of The Mines Act before the commencement of work at _____ M. and that the following is a true and accurate report of my inspection:

Noxious or inflammable gases	None
State of ventilation	Good
Condition of roof and sides	Safe
Supply of timber	Sufficient

Remarks:

Each certificate is dated and is signed by the examiner and countersigned with the initials of the succeeding examiner, the overman and the manager. From the beginning of the book on October 11th to October 31st, including the shift ending just before the explosion, all questions are answered as above, without a single exception. These reports are signed variously, sometimes by Whyte, sometimes by Minue, sometimes by O'Neill, and two certificates are signed by D'Amico. The initials are not always easy to identify, except the initials of the manager "J.S.", which I take to be those of James Stewart, the Mine Manager. Minue says he put these reports in a box where they could be read by the miners. He says the miners never read them, but for this they can hardly be blamed, because they would know that the gas report was untrue. He says that all reports were identical and they have not varied for years. Minue's explanation is that each fireboss, when going off duty, made a verbal report to the fireboss who followed. He says that on occasions he reported verbally to O'Neill and Armstrong traces of gas when he was going off duty. Minue says that in his 12 years experience as a fireboss at Brazeau, he never reported the presence of gas in writing. He says he never saw gas reported in the Report Book. He "guesses" that this was just a custom.

Minue further says that he always tested for gas before firing in any place where he thought there would be gas. He says that he always went back to the face after firing but he did not test for gas because he was in too big a hurry to get to the next place. He says he was pretty busy.

The next important point to be noted in Mr. Minue's evidence is the fact that he inspected Room 13, (the place where the explosion occurred) about three hours before the explosion. As pointed out above, Daniel Jones and his partner Dimirco went to work in this room at 4:00 P.M. intending to work till midnight. They encountered gas but went on with their work and Fireboss Whyte fired their shots. Then they encountered more gas and finally quit at 9:30 P.M. on account of gas. They reported the presence of gas to Pitboss Parker. Mr. Parker corroborates Jones' evidence in this respect. Minue says that he saw Parker when he, Minue, was coming on duty and Parker told him that some tubing was needed on the 4th Left Water Level. There was no brattice in Room 13 and up to the night before the explosion the tubing extended only 15 or 20 feet into the room, although the room was about 40 feet long. Minue thereupon sent Gabriel Lebihan, commonly known as "Frenchie", to put further tubing in the room. Frenchie says that he went down to Room 13 about midnight and found some additional tubing in the room. He made the necessary connections, bringing the exit of the tubing up to within six to 10 feet from the face. He finished about 1:30 A.M. and

then went to other work in the mine. Finishing this work about 6:30 A.M. he came back to see if the tubing was working effectively. He had no lamp to test for gas, but says that as far as he could tell it was working all right. Minue says that before going off duty he went down to Room 13 at about 6:00 A.M. We have then this peculiar situation. There was gas in Room 13 at 9:00 P.M. so bad that the miners refused to work further. Frenchie put in more tubing at 1:30 A.M. and at 6:00 A.M. according to Minue, it was clear of gas. At 6:30 A.M. Frenchie again inspected the room and it was clear of gas. There is no evidence of any fan stopping of its own accord at any time. It may, I think be safely assumed that if the tubing installed by Frenchie was effective to clear the air of gas in Room 13 before 6:00 A.M. it would have been effective to keep the air clear until 9:00 A.M. But when a few minutes after 9:00 A.M., three shots were fired in Room 13 for the new shift, a terrific explosion ensued. It is, of course, possible that the first or second shot may have released a pocket of gas sufficient in quantity when ignited by the third shot to cause the explosion. It is common ground that the third shot was a "windy" shot, and was the igniting shot. By a "windy" shot is meant a shot or explosion, the energy of which does not perform its proper function of shattering the surrounding coal, but which, due to some opening or weakness in the surrounding structure, escapes in one direction into the open air.

The only matters that seem certain are that there was gas in dangerous quantities in Room 13 at 9:30 on the evening of October 31st and that an explosion took place about 9:15 the next morning in Room 13. What transpired in Room 13 in the intervening 12 hours can only be gathered from the evidence of Minue and Frenchie. To make a finding of fact it would be necessary to balance their evidence against the unlikelihood of a sudden gas emission sufficient in volume to result in an explosion. Any finding could not be free from great uncertainty. I do not consider it necessary to make such a finding of fact because in my view, as I shall later point out, the accident was not due primarily to any isolated negligent act of any individual but rather to a general and systematic disregard of the provisions of The Mines Act, which disregard was altogether likely to result sooner or later in an explosion.

Robert Whyte.

Whyte has worked in Brazeau Mines for 19 years as fireboss. On the afternoon of October 30th he fired three shots in Room 13 on the 4th Left Water Level about 4:30 P.M. He says he inspected for gas in Room 13, but found none. He says this was the only room he tested because he thought it was the only room in which there might be gas. He says he also fired shots that afternoon in Rooms 33 and 37 and in the face of the 4th Left Level. He did not test for gas before firing because other miners were waiting to have their shots fired and because the tubing was pretty close to the face - he thinks about 20 feet away. Although no one spoke to him about gas, the only test he made for gas was in Room 13. He can give no satisfactory explanation why he selected Room 13. He says that the firebosses signed the Examiners' Report Book (Exhibit 18) certifying that there was no gas, just as a matter of custom, but he says they told the oncoming fireboss of gas if any was found. He says he went back to Room 13 about 10:30 P.M., after Jones and his partner had left on account of gas. He explains his visit to Room 13 by saying that he was "just going around". He found Jones and his partner had gone home but he did not ask

anyone why they had gone home. He says quite positively that there was no gas in Room 13 at the time of his second visit, although he did not test for gas. I cannot accept his statement in this respect. He also says that Jones and his partner had loaded all the available cars with coal before they left for home. This would seem to suggest that Jones left because he had filled all available cars and not because of gas. There were certain matters in the evidence of Whyte which led me to think he was not frank in his statements and I accept without any hesitation the statements of Jones and Dimirco that they left Room 13 about 9:30 P.M. on account of gas. Jones says that Whyte had a safety lamp at the time he fired the shots in Room 13, but that he did not use it to test for gas either before firing the shots or between the firing of the shots. Whyte says he "inspected with a safety lamp" for gas. Jones also says that on Tuesday preceding the accident, when they were having trouble with gas, he asked Whyte for more tubing and Whyte said he would try to get it. I accept the evidence of Jones in these matters.

Michael James O'Neill.

Mr. O'Neill has been a fireboss since 1927 at Nordegg. Has was on the 4th Right Level at the time of the explosion and escaped injury, but on the day preceding the explosion, he was on duty at the 4th Left Level. He found gas at about one foot from the roof. He found gas in two places but not in sufficient quantities to withdraw the men. O'Neill says that he thought ventilation was sufficient, but he also says that conditions altered and at times gas conditions were bad. He expresses the opinion that "when you have gas in any quantity, any percentage, you ought to have it removed." This witness seemed to be averse to expressing any opinion, but he did state his view that if Room 13 had been bratticed, this, with the fan, would have cleared Room 13 of gas. Mr. O'Neill says he knew that shortly before the explosion miners were leaving their working places at the mine on account of gas conditions. He thinks gas was being produced regularly by what he terms a "squeeze". He thinks this "squeeze" was due to the quality of the coal or perhaps to the pillars being insufficient in size. He says that the signing of the statement (Exhibit 18) certifying that there was no gas was merely a custom which he learned from the book itself. He admits that the statement was not correct. Incidentally, O'Neill says that complying with all the provisions of the Act would require 45 minutes to fire three shots. It does not appear that any fireboss took even half that time to fire three shots, but Mr. O'Neill seemed to think that his statement was a criticism of The Mines Act rather than of those who flagrantly disobeyed it.

Jack Parker. /

Parker came to work at Brazeau on July 2nd, 1941, and continued up to the time of the accident - a period of about four months. He says he came to the Brazeau Mine for the purpose of getting experience in a "gassy" mine. He began as a driver and mucker and in a short time was promoted to the position of shot-lighter, then fireboss, and for nine days acted as pitboss while the regular pitboss, Jack Armstrong, was ill. He reverted to fireboss and was made pitboss again a few days before the accident. His evidence is valuable because it was given in a frank manner and also because he brought to bear upon the whole situation a fresh mind unimpaired by long-established "custom". He says there was gas practically everywhere. In some places it was bad and in some places not so bad.

It was worst in Room 11, where it put out the light of the safety lamp. He says it was safe up to a certain point, but in his opinion, the gas was getting really dangerous. The gas was mainly in dead ends and at the top of the rooms. By reason of gas he sent men home on one or two occasions and sometimes changed men from one location to another.

In reply to questions Parker explained his signing of the certificates (Exhibit 18) above referred to. He necessarily referred to his superior, Jack Armstrong. Armstrong was apparently a fine man and his fellow officers pay splendid tributes to his memory. Whatever may have been his individual responsibility for the system which was collectively followed, he paid for it with his life. But however deeply one may regret that he is no longer able to speak for himself, it is clear that an investigation into the accident in which he and many others lost their lives, cannot properly be carried on unless all the pertinent facts are brought out. At page 803 of the transcript, Parker, in reply to a question "Do you remember just what he (Armstrong) said?" answered "Well, the first day I was firebossing and made out a report, Jack Armstrong was standing right beside me when I was making it out the same as it should have been made out, gas reports and everything else, but he says, make out these reports the same as they are before. I says, do you know what you are doing? and he said yes, and I says, I am not taking any responsibility, but I will sign it, and I signed the report".

Parker admits he knew he was wrong in signing or initialling the report and must share the responsibility with all his fellow officials who did the same thing.

Parker further says that on the last Monday in September he saw Mine Manager Stewart at the lamp house and told him there was gas in the mine. He says that Stewart replied, "What the hell do you know about gas?" Parker says he then thought, "What the hell is the use? Stewart is running the mine." Mr. Stewart denies that Parker ever spoke to him about gas in the mine. He says that he avoids unparliamentary language when speaking of matters so serious as gas in the mine and safety. I see no reason to doubt Parker's evidence in this respect. He is speaking of a statement made to him by the Mine Manager which, in the circumstances, would be very likely to fasten itself in his mind. The Mine Manager already knew well of the existence of gas in the mine and the statement of a newcomer like Parker as to gas in the mine would not likely impress him, but would likely provoke a reply of the kind indicated by Parker.

James Stewart.

Mr. Stewart came to Brazeau in 1914 and since 1921 has been Mine Manager. Mr. Stewart says he was responsible for what took place in the mine. He says he did not give instructions to firebosses as to gas because he did not think it was necessary. He thought that the certificates in Exhibit 18, as to there being no gas were true reports from the firebosses. He was not worried about gas conditions in September and October 1941. Stewart went on his holidays on September 18th and returned about October 1st. During his absence, Mr. John Shanks acted as Mine Manager. Stewart says he found gas at the faces but "can't say that it was in dangerous quantities". He says he cannot recollect moving men on account of gas during September or October, but does remember moving men in August on account of a heavy feeder. Mr. Stewart provided a book (Exhibit 21) which was called the

Complaint Book or Grievance Book. This book was kept by the lampman at the lamp house, where men going off shift always leave their lamps. The lampman was instructed to enter in this book the reasons why any miner went home before his shift was ended. If the miner left on account of gas conditions, the lampman entered in his book "Place dirty". There are some 13 entries of "Place dirty" in this book in the preceding two months. Mr. Stewart must have known of these complaints because he says he established this system in order that grievances would be brought to his attention in this way. Mr. Stewart knew that feeders or blowers were likely to occur in these places in the ordinary course of working and without being brought on by shot firing. These alone would appear to make constant vigilance a necessity. Mr. Stewart, however, maintained that any gas he found could be handled in a short time "by extending brattice to the face".

On September 29th while Mr. Stewart was absent on his holidays, a committee from the Nordegg Local of the United Mine Workers of America consisting of the President and Secretary and Recording Secretary of the Local waited on Mr. John Shanks, the General Manager of Brazeau Mines, complaining about men losing time because of being compelled to go home on account of gas. As a result, Mr. Shanks wrote a letter to Mr. Stewart, which will be dealt with later.

As a result of this mass of evidence as to the presence of gas, I arrive at three conclusions, as follows:

1. That for a long period prior to the explosion gas existed in dangerous quantities in Brazeau Mines. These accumulations were found generally near the roof and at dead ends and working faces. The gas was found naturally at the roof as methane is lighter than air. These accumulations were not always in the same places. They varied from time to time both in location and in density.
2. The existence of gas in the mine in quantities which were potentially dangerous was known to practically everybody connected with the operation of the mine.
3. That each and every report made in pursuance of Section 127 for a long period prior to the accident contained a statement of fact that there were no noxious or inflammable gases in the mine at the time of inspection before the shift began work, that each report was signed by one of the firebosses and initialled by the succeeding fireboss and by the pithoss and in most cases by the mine manager, that this statement was often, if not always untrue in fact and I cannot avoid the conclusion that it was known to be untrue by all those who signed or initialled it. I arrive at this conclusion despite the fact that the certificates in Exhibit 18 purport to be made in pursuance of Section 127 which contemplates only gas discovered on an inspection made before a shift commences work. It is a significant fact that all reports after the accident as far as Exhibit 18 extends contain statements showing the existence of gas in various parts of the mine. Section 127 of the Act above quoted, requires a "true report". It is a sorry reflection that a disaster such as that now being investigated was necessary in order to induce mine officials to report in accordance with the law as well as in accordance with the known facts.

VENTILATION

The provision with respect to ventilation governing all those who undertake to operate a mine in this Province is Section 113 of The Mines Act, which reads as follows:

"113.--(1) An adequate amount of ventilation shall be constantly produced in every mine to dilute and render harmless all noxious or inflammable gases to such an extent that the working places of the shafts, levels, stables and workings of the mine, and the travelling roads to and from such working places shall be in a fit state for working and passing therein."

This section is a copy, almost verbatim, of Section 29 of the English Coal Mines Act, 1911, which in turn is copied from the English Mines Act of 1860. There seems to have been a disposition among the officials of the Brazeau Mines to disregard gas because it was at the roof, a considerable distance above the heads of miners standing on the floor. This question came before the English Court of Queen's Bench in Atkinson vs. Morgan, 1915, 3 K.B. 23. In that case the owner had allowed gas to accumulate in a cavity in the roof. The Court was called upon to interpret Section 29 which is practically the same as our Section 113. The Court unanimously held that the words "shafts, levels, stables, roads and workings" include portions of the mine contiguous thereto, although not coming strictly within any of these descriptions. This appears to be only common sense, although some of the officials here seem to have overlooked it. The ceiling of No. 3 Seam is irregular and has some pockets in it, but a miner surely has a right not only to have the floor on which he walks free from inflammable or noxious gas, but also to know that he will not, through some change or convulsion be killed or asphyxiated by gas from above.

The ventilation system, as Dr. Gray points out, was adequate in volume and velocity to remove and dilute ordinary gas emission. But where the rate of gas emission is not fixed and where blowers are not uncommon and sudden extraordinary emissions may take place, a ventilation system should be able to do more than take care of mere ordinary emissions. Then again it is apparent even to an observer who is not a miner, that volume and velocity of the air current are not the only requirements. The air must circulate through all the working parts of the mine and obviously complete circulation in all working parts cannot be attained merely by volume and velocity alone. The statutory requirements are further set out in Sections 114 and 121 of the Act, which sections are as follows:

"114. The air current shall be conducted and circulated to and along the face of each and every working place throughout the entire mine in sufficient quantities to dilute, render harmless and sweep away smoke and noxious gases or inflammable gases to such an extent that all working places and travelling roads shall be in a safe and fit state to work and travel therein."

"121. In all headways and fast ends the ventilation shall be conducted to the face of the working of the fast ends by means of brattice, air pipes or vent tubes."

It will be noted that the language of Section 114 sets forth a peremptory statutory requirement, viz., that all working places and travelling roads shall, as far as noxious or inflammable gases are concerned, be in a safe and fit state to work and travel therein. It sets forth a result which the operator must achieve and if he fails his ventilation system

is inadequate. The fact that some workmen were overcome by methane gas at the working places in the mine and fell from the bench, while others felt the preliminary symptoms of methane poisoning in their legs and arms and left the mine, clearly indicates that the ventilation system has not been producing the results required by the Act.

As far as ventilation is concerned, two matters received considerable attention in the course of the evidence, viz., -

1. In development work the level was driven too far ahead of the rooms and cross cuts.
2. The brattice was not at all times kept as close to the face of the dead ends as was reasonably possible. Section 121 provides that the ventilation shall be conducted to the face.

As to the first condition mentioned, Minue, who is a fireboss, expressed the opinion that the levels were too far ahead of the last clear channel. Mr. Stewart, the Mine Manager, expressed the same opinion. The General Manager, Mr. John Shanks, was acting as mine manager during the time when Mr. Stewart was on his holidays. While so acting he made an inspection of the mine, not at the time for the purposes of examining the ventilation system or methods of development but rather to make, as he expressed it, a physical examination of the mine. But his attention was drawn to both of these matters. He ordered Room 31 to be put through and this work was undertaken at once. He found some traces of gas, but he found the ventilation all right where the cross-cuts were through. As a result of his investigations he was desirous of discontinuing the method of driving levels far ahead of rooms and cross-cuts. He accordingly drew up a plan of development as he desired it and posted this plan in the office of the firebosses. During the hearing this plan was taken down and filed with the Commission as Exhibit 28. It is headed "Notice to Officials" in large letters. At the bottom the following direction is written, viz., "The above method of bratticing and stage of development must be adhered to as far as reasonably practical in all developing levels." The plan shows a level from which one room is through to the cross-cut above, while a second room nearer the end of the level is advanced only part way to the cross-cut. The end of the level is only a short distance beyond. The plan shows brattice close to the face of the level and also close to the face of the latter room. In this uncompleted room brattice runs up close to the face so that the air current must circulate close to the face. This latter room closely resembles Room 13 on the plan (Exhibit 6), except that Room 13 had no brattice in it, but had merely a vent tube branching off from another tube running along the level.

Mr. George Batty, who is secretary of the Executive Committee of the Local Union of the United Mine Workers of America, says that on three different occasions, viz., in January, February and June, 1941, this Committee interviewed Mr. Stewart complaining of gas conditions. Mr. Stewart said he would remedy these matters by repairing stoppings. He repaired the stoppings, but results were only temporary. Each time they interviewed Mr. Stewart they got about the same answers and the same results. Then on September 29th, which was just before Mr. Shanks was leaving town and also just before Mr. Stewart returned from his holidays, the Committee interviewed Mr. Shanks about gas conditions. Mr. Shanks said these conditions would be remedied

and that he would instruct his Mine Manager accordingly. On the same date, Mr. Shanks wrote a letter to Mr. Stewart, which was put in as Exhibit 35, and which is of sufficient importance to be copied here:

"I have just had a deputation here to see me about men having to go home because of being gassed out.

This was taken up at the Union Meeting on Sunday and I won't be surprised if a letter has gone to the Chief Inspector. On Thursday I found 300 feet of gas in the 4th right level, and now men are going home from the 4th left level daily because of gas. If I find I have an official who will fire a shot in the presence of gas I will not only fire him but I will have his papers taken away from him.

There is considerable talk in the town. Please get this situation cleaned up immediately and I will help you when I get back from Edmonton.

Auxilliary fans have been the curse of this colliery and I intend doing away with them. This work will be carried out as in 1919 - 1924 large production years."

This plan was not carried out by Mr. Stewart apparently because he thought there was not time to make effective a new method of development before October 31st when the explosion took place. Mr. Stewart does admit, however, that he could easily have set up the brattice according to the plan, in two days or a week. It is true that Mr. Shanks does not instruct Mr. Stewart to do away with the auxiliary fans. He merely says, "I intend doing away with them." But in view of the possible or even probable results that would have followed the installation of brattice up to the face of Room 13, it is unfortunate that this was not done. This will be referred to later.

Section 156, Rule 30 of The Mines Act provides:

"Where brattice or air-pipes are required by the manager or overman to be used for the ventilation of the working places the examiner shall see that they are kept sufficiently advanced to insure that an adequate amount of air reaches the working faces." Many witnesses testify to the brattice or tubing being too far from the face. Minue says he thought they were a little too far ahead; meaning, as I understand it, that the level was driven too far ahead of the rooms and cross-cuts. Westcott says that he often asked for further brattice to be put up, but it was not done and the ventilation was not caught up as it should be. George Duncan says that on the right water level that the fan was about 600 feet behind them all the time. He says that at Room 9 the end of the tube was 500 feet behind and there was no bratticing. Shaw says that at the time his partner was overcome by gas and fell from the bench on top of Shaw that they were 20 to 25 feet away from the air. Romanzin says that the day before the accident the tubing was back 40 or 50 feet from the face at which he was working. Frazzutti says that the brattice was back 25 feet from the face in Room 9 and the tubing was 15 or 20 feet from the face.

SHORTAGE OF BRATTICE OR TUBING

Many witnesses testify as to a shortage of tubing and brattice. Fireboss Minue says they were short of brattice and could not get it. He says they were better with tubing, but were a little short of it also. He further says

that if, on account of shortage of brattice or tubing, he thought there was danger of gas he took the men out and moved them to other places. He adds that he had only the word of the pitboss as to the shortage. This would follow naturally enough as he would apply to his superior for the brattice and would, of course, accept his word as to the shortage. Fireboss Parker says he asked Armstrong for brattice and was told he could not get any. He says that he asked for brattice during the eight weeks preceding the explosion and his requests were turned down. Parker says that in October 1941, gas conditions could have been remedied if they had the materials to do it with. D'Amico, who was a timberman, says that they were very often short of brattice. At times he would go to the warehouse with his order and would be told that it was not in yet, and then they would not get it for a week.

Westcott says they had difficulty getting material and as far as brattice is concerned, it was practically impossible to get. He made his applications for brattice to the pitboss or to the fireboss. The answer usually was that they would do the best they could, or as soon as they could, and he did not always get a civil answer. But he says he did not get the brattice.

Many miners testified to a shortage of brattice. The evidence of a few only need be given here. John Bozak says he often found himself short of brattice. About one-third of the time while bratticing, he was short of brattice. He says he would ask Armstrong for brattice and Armstrong would often say he had not any and could not get it. Bozak was refused two or three times during September 1941. Once in September, 1941, he told Armstrong that he needed brattice as the gas was getting bad, but Armstrong shook his head and Bozak got no brattice.

August Frazzutti says that on one occasion, shortly before the explosion, he and his partner were working in Room 9 on the 4th Right Level, where there was some gas. The General Manager came along and told them to come out and he would give them another place to work. He put them to work starting Room 11. Two days later Mr. Stewart came along and asked what they were doing there, and they replied that Mr. Shanks had put them there. Stewart thereupon replied that he could ventilate the place if he had plenty of brattice and tubing.

William Poliwczuk, who was working at the face of the 4th Left Level the afternoon before the explosion, says he told Fireboss Whyte about gas at the roof and said that they needed more tubing. Whyte said there was no tubing in the mine and that he could not help it. A few weeks before he had spoken to Fireboss O'Neill about tubing. He sent only about 15 or 20 feet, which was not enough. Other miners testify to the same effect.

On the other hand, Howard F. Greenwood, who is in charge of the warehouse and stores, gave evidence. He says that excepting a short period after the war began, when a cargo boat went down, and excepting a few days about May 1st, 1941, he was never out of brattice. He further says, apart from these two occasions, he always had an ample supply. Further, he says that in August, September and October, 1941, he had more brattice on hand than ever before.

It is difficult to harmonize this evidence. I have no reason to doubt the evidence of Mr. Greenwood or of any of the other witnesses. It cannot be said that the evidence of the witnesses refers to one or the other of the two periods during which brattice was admittedly short. Most, if not all, of the evidence refers to periods subsequent to May 1st, 1941. Accepting the evidence of all the witnesses, I can only conclude that as there was plenty of brattice in the warehouse and a shortage at points where it was needed, some influence or authority, undisclosed by the evidence, must have intervened to prevent the passage of brattice from the warehouse to the point where it was needed.

BRUSHING GAS

This subject has already been alluded to. Most of the miners who gave evidence testified to brushing gas and it seems to have been not only a common but a recognized practice. Sometimes the miners brushed on their own responsibility and in order to enable them to get on with their work. Sometimes they secured the consent of a mine official, in which case they were paid for their time out of Company funds. In all cases, the brushing was done apparently without the supervision of any person holding a certificate of competency. Only in one case that I can remember did a fireboss stand by and perhaps supervise the process of brushing. This was done by Parker. The miners have no means at hand of testing for gas. They know of its presence only by its physical effect upon themselves. They cannot tell whether or not it is present in an explosive mixture. In any case, a sudden extraordinary emission may convert a relatively harmless quantity of gas into an explosive mixture. The very necessity of moving or diluting a quantity of standing gas in this way ought to act as a warning to everyone concerned. The air current has not been conducted and circulated as required by Section 114 of The Mines Act. Regulation 8 of the Regulations made pursuant to The Mines Act provides as follows:

"No person shall remove standing gas in any mine unless under the direct personal supervision of some person holding a first, second or third class certificate of competency under The Mines Act."

Fireboss Minue says that he does not consider that the gas which was brushed by the miners who gave evidence was "standing gas" within the meaning of Regulation 8. No definition of this term is given either in the act or in the regulations. It would appear that the gas was brushed because it was "standing" and in an effort to move it. I think this gas was standing gas as contemplated by Regulation 8.

SHOT-FIRING BY FIREBOSSSES

In The Mines Act these officials are usually called examiners, but in practice they are called firebosses, the words being interchangeable. The duties of a fireboss are defined in Sections 4 (j) 65 and 66. His duties as defined by Section 65 are "to make such inspections and carry out such duties as to the presence of gas, ventilation, state of roof and sides, and general safety and such other duties as are required by this Act and the regulations made thereunder;". Then Section 66 (2) provides that every fireboss shall devote his whole time to his inspection duties under this section except where the duties assigned to or undertaken by him in addition to his inspection duties are not such as to prevent

him carrying out such inspection duties in a thorough manner. This provision, however, shall not prevent the examiner being employed in measuring the work done by persons in his district, nor in firing shots in his district. In case there is a difference of opinion as to whether such additional duties do in fact interfere, the matter may be referred to the District Inspector. Some difficulty may arise in interpreting these provisions, but however that may be, there is one matter I would like to make clear, because some confusion with respect to it seemed to exist in the minds of firebosses. When carrying out the duties assigned to them by the Act, including shot-firing, no outside work and no external considerations can in any way relieve them from their paramount obligation to obey the law.

The firebosses say that in various ways they were too busy. Minue says he did not test for gas after firing because he was in too big a hurry. He says he was "pretty busy". Whyte says he did not test for gas before firing because other men were waiting for their shots. He says he had so much work to do that he could not do it properly. O'Neill says he was sometimes taken away from his duties as fireboss to do other work. He says he could not perform his duties as fireboss and comply with the provisions of The Mines Act because of other duties. He says he had too many other things to do.

There is practically no evidence on the point which I now mention, but one does not need to be much of a realist to envisage what happens in these circumstances. The miners go on shift at, say, 8:00 A.M. By 9:00 or 9:15 they have their shots placed and ready to have them fired. They are naturally anxious to get the shots fired so they can get on with their work of loading cars. The mine management is naturally desirous that there be no unnecessary delays. If a fireboss by a rigid but proper observance of the law does all the acts required by The Mines Act, he delays production and slows up the whole tempo of the mine. If he takes longer to fire the shots than do his fellow firebosses, then he feels he is not as efficient as they are, and he probably also feels, without any threats whatever from above, that his job is not as safe as their jobs are.

Methane is a dangerous substance. It is inflammable and when mixed with air in certain proportions forms a dangerous explosive mixture. The explosive range of concentration is roughly from 5% to 15% methane by volume in air. Concentrations below the lower limit are not dangerous, but nevertheless, these should serve as a warning, because they may readily develop into explosive mixtures. Concentrations above the upper limit will not explode but will transmit flame along the region of contact with purer atmospheres. For the purpose of testing the percentage of methane, each fireboss is supplied with a flame type safety lamp. A diagram was put in (Exhibit 19) showing the flame reactions of this lamp in methane. The following percentages of methane show the following flame reactions:

- 0.75% - No appearance of cap on flame
- 1.00% - Faint appearance of cap at edges
- 1.50% - Faint cap at lower extremities
- 2.00% - Distinct cap. Top edge straight

- 3.00% - Complete cap with pointed tip
- 4.00% - Sign of "spiring"
- 4.50% - "Spiring" into wire gauze

Somewhere slightly above this percentage the lamp goes out and the going out of the lamp is a danger signal. Every fireboss is, of course, acquainted with these phenomena and is able to gauge fairly accurately the exact percentage of methane in the air at a given place and he knows well when the mixture approaches the explosive point, not as a matter of opinion, but as a matter of fact.

The ignition of an explosive mixture of methane may result from the after flame following the detonation of explosives. The shot-firing in a mine may ignite an explosive mixture of methane. This ignition is much more likely to happen if the shot should turn out to be a "windy" shot, because a windy shot is much more likely to be accompanied by flame. It would, therefore, be a wise precaution, even if it were not a statutory requirement, to inspect all contiguous places to see if gas in explosive concentrations be present. Such inspections would, of course, take place before the shot is fired. If three or four shots are fired in succession the inspection would take place before each shot is fired, that is to say, before the first shot and between the other shots. After a shot has been fired and if no explosion immediately takes place, then the danger from that shot has passed.

It is argued here that the statute does not require a routine inspection before each shot is fired and that in any case the question of whether or not it is safe to fire any shot is left by the statute to the judgment of the shot-firer. The relevant portion of the statute is contained in Section 139 (16) and reads as follows:

"he shall also examine all places contiguous thereto within a radius of sixty feet and shall not fire the shot unless he finds it safe to do so, and no shot shall be fired if gas is detected in such quantities as to make it unsafe to do so,"

It will be noted that the statute makes no reference to the shot-firer's "judgment" or "opinion". It provides that if he "finds" it unsafe, not if he "considers" it unsafe. This language seems to take the question of safety out of the region of mere opinion and to place it in the region of fact - where I suppose most persons will agree, it properly belongs. Then the statute says "if gas is detected in such quantities as to make it unsafe". Clearly the shot-firer cannot "detect" unless he inspects. It cannot be supposed that the statute means that he is under no obligation to inspect and that the detection, if any, may be a mere accidental discovery. If he inspects he can do so only with the instruments which the statute and the regulations provide. The results of such an inspection are matters of fact and not matters of judgment. The safety or lack of safety is determined not by the judgment of the shot-firer, but by the reactions of the safety lamp. Whilst more apt language might have been used in this section, I am of the opinion that the language used means that the shot-firer must inspect or test with the instruments provided by the statute, namely, in this case a flame type safety lamp, before any shot is fired, and if that test discloses as a fact the presence of such quantities of gas as to make it unsafe to fire, then the shot shall not be fired.

The English Explosives in Coal Mines Order, Clause 6 (f) states in clear language what is required there. It provides that in all cases where explosives are required to be

used, no shot shall be fired unless immediately before the shot is fired the shot-firer has examined with a locked flame safety lamp of approved type or with apparatus approved for the purpose by the Board of Trade, the place where the shot is to be fired, and all contiguous accessible places within a radius of twenty yards from the place and has found them clear of inflammable gas and in all respects safe for firing. This clause expresses in unmistakeable language what, in my opinion, Section 139 (16) of our Mines Act leaves, to some extent, to necessary inference.

SHOT-FIRING

At this mine the firebosses acted as shot-firers. It is unnecessary to review the evidence in connection with the practice of the firebosses in respect of shot-firing. There were occasional inspections for gas before the first shot was fired, but the whole evidence is to the effect that no inspections whatever were made between shots. Indeed, some of the firebosses excuse these omissions by saying that it would take too long to make these tests and that they were too busy to do so. That, then, was the system in vogue in this mine.

CAUSES OF THE EXPLOSION

After the above preliminary survey of the evidence and the conclusions drawn therefrom, we now come to one of the two main objects of the Commission, viz., the cause of the disaster. As all the men in the area affected by the explosion were killed, there can be no direct evidence as to what took place. The evidence seems to establish conclusively, however, that the disaster was the result of a gas explosion which occurred in Room 13 of the 4th Left Water Level. The shots at the face of the water level had been fired. An examination of the face of Room 13 after the explosion discloses that three shots had been fired there and that one of these shots was a windy shot. If the windy shot ignited the gas, as seems altogether likely, then, of course, it was the last shot fired. Mr. A.B. Hunter, Assistant Chief Inspector of Mines, who examined the face, thinks the top shot was a dangerous shot to fire. The bodies of Armstrong and the miners working in Room 13 were found in the level just outside Room 13. This would indicate, I think clearly, that the men were killed while the pitboss was engaged in firing the shots in Room 13. At the hearing and on the argument, everyone seems to have assumed, - and I think correctly - that the explosion took place in Room 13.

As already pointed out, the evidence discloses that Jones and his partner left Room 13 at about 9:30 P.M. on account of gas. According to the evidence of Fireboss Minue and Frenchie the gas was all cleared away by about 6:00 A.M. as a result of the additional length of tubing put in by Frenchie. It is therefore reasonable to assume that this tubing would be sufficient to keep Room 13 clear of gas up to 8:00 A.M. when the new shift came on and also up to the time when the new shift had prepared their shots ready for firing, which would be about 9:00 or 9:15 A.M. This was the time of the explosion. The only reasonable explanation seems to be that the firing of the first or second shot suddenly released a quantity of gas so great as to overpower for the moment the ventilating capacity of the tubing. This gas, forming an explosive mixture, was ignited by the windy shot.

Accepting this explanation, two matters stand out, - the first a reasonable certainty and the second a

possibility and perhaps a probability:

1. If an inspection of the face had been made by Armstrong before firing each shot, as I have found The Mines Act requires him to do, then the presence of this large gas emission would have been discovered and the succeeding shot would not have been fired.
2. As already pointed out, the General Manager declared in his letter written one month before the accident that "auxilliary fans have been the **curse** of this Colliery. I intend doing away with them. The work will be carried on as in 1919 - 1924, the large production years". One might reasonably expect that an auxilliary system of ventilation which has been a curse to the mine apparently since 1924, would be discovered and dispensed with before 1941. The Mine Manager says in a general way that he proceeded to carry out the instructions contained in the letter but no details are given. There is evidence that the brattice could be put up in a very short time. The Mines Act requires adequate ventilation, but it does not, of course, require the instantaneous removal of gas at the precise moment that it appears.

In my view, if brattice had been installed in Room 13 up to the face so that air would be moved at the face in the quantities provided in the Act, then a sudden emission of gas, in quantities such as probably occurred here, might and probably would, even in the brief time between shots, have been diluted to a point below the ignition point.

To sum up the causes of the disaster, I would say as follows:

1. Whilst the immediate cause of the disaster was the explosion in Room 13, the secondary and more real cause was the failure of the pitboss who fired the shots in Room 13 on the morning of October 31st, 1941, to make the necessary inspection before firing. If this failure were the isolated failure of this particular official, and if such failure were contrary to the practice of all the firebosses, then he would have to assume the burden alone. But as already pointed out, he was but following the practice followed by all the firebosses in this mine. He was doing what they all ordinarily did. His conduct was merely part of the system. If any of the firebosses had fired the shots in Room 13 that morning he would have fired them in the same way and he, instead of Armstrong, would have been the victim.
2. Behind the failure of the firebosses to test for gas before firing there was on the part of all the officials actively engaged in the operation of the mine a general disregard of the safety provisions of The Mines Act and a general indifference to, and contempt for the dangers incident to gas accumulations in the mine.
3. It should be added that a contributing cause of gas accumulations and therefore of the explosion was a failure to keep brattice up close to the face in all working places, together with a system of development whereby the levels were driven too far ahead of the rooms and cross-cuts.

RESPONSIBILITY FOR THE CAUSES OF THE DISASTER

A considerable amount of evidence was directed to this matter and it was later argued before me at some length. It does not seem to me to be a matter which can be passed over. The firebosses have already been dealt with. It remains only to consider the responsibility of the miners and of officials higher in authority than the firebosses.

The miners are an organized body with intelligent and efficient leadership. It is reasonable to expect that they would not only obey, but would cooperate in the enforcement of safety regulations. But on the other hand they are without authority and without the means of getting technical information possessed by the management.

In the first place, the miners themselves reported leaving their work on account of gas at least thirteen times in the two months preceding the disaster. It may be that all did not report, but on the other hand, some probably made complaints which were not noted. Jones complained before leaving on the day before the explosion, but his complaint is not entered even in Mr. Stewart's book.

In the second place, the miners, through their official representatives, waited on the mine manager on three occasions complaining of men having to leave the mine on account of gas. Getting no satisfactory results they then waited on the general manager with the same complaint. The latter promised remedial measures, but soon after the disaster came. It may be that the miners were impatient to have their shots fired and that they stood silently by while the firebosses fired the shots without any inspections whatever. Technically they may have condoned these breaches of the law but they had no authority over their superiors nor any responsibility for the acts of their superiors. On the whole evidence I must find that the miners did all that could reasonably have been expected of them.

I have already dealt with the firebosses, pointing out how they fired the shots regularly without inspecting for gas. (They made no pretence of regulating the quantity of explosive to be used in any hole or of supervising the loading of the hole as required by Section 139 (16).) These breaches of the law were known to the pitbosses. Section 157 (1) of The Mines Act declares that the mine manager shall be responsible for seeing that all the requirements of the Act are carried out and for the safe operation of the mine. It does not seem possible that over so long a period these infractions of the law could have been hidden from the mine manager or that he made no effort to discover in what manner shot-firing, which is probably the most dangerous operation in a gassy mine, was being carried out.

In this case I think all officials must bear a responsibility increasing in weight with the individual's ascent in the scale of authority.

RESPONSIBILITY OF THE AGENT

Some argument took place as to the responsibility of Mr. John Shanks who is the agent of the owner. I have read the provisions of The Mines Act and the evidence bearing on this question with care. I shall not attempt to do that which the Act itself does not do, namely, to draw a

sharp line of demarcation between the duties of the manager and those of the agent. Generally speaking, the agent has on behalf of the owner the "care and direction" of the mine, while the manager has the "control and daily supervision" of the mine. The agent is superior to the manager (Section 61 (1)) but if he takes part in the "technical management" of the mine he must be properly qualified and he is subject to the same responsibilities as a manager (Section 61 (2)). He must not interfere in the "technical management in any way calculated to bring about a breach of the Act".

Section 172 (1) fixes the responsibility for seeing that the provisions of the Act are complied with, on the owner, agent and manager alike. But we are not dealing here with civil liability in damages which may be only what the subsection affects. Be that as it may, subsection (2) provides that in respect of an offence for contravening the provisions of the Act, the owner shall not be liable if he proves:

- a. That he was not in the habit of taking, and did not in respect of the matter in question take, any part in the management of the mine; and
- b. that he had made all the financial and other provisions necessary to enable the manager to carry out his duties; and
- c. that the offence was committed without his knowledge, consent or connivance.

With respect to "b" the evidence is that all necessary financial provisions were made. With respect to "c" the offence here, if any, must have been either the act of Armstrong in firing the shots without previous inspection or the similar act or acts of the other firebosses. But the agent says he knew nothing about these matters and there is no evidence to the contrary. With respect to "a", many matters may be considered. The agent says that he never interfered in the management of the mine and that is, doubtless, his interpretation of his actions. On one occasion, he moved men on account of gas. This was quite proper action on his part, although Mr. Stewart, when he was told about it suggested another remedy. On August 5th, Mr. Heeley, on his regular inspection told Mr. Shanks of finding gas on the 4th Left Water Level in quantities which compelled the withdrawal of the men and Mr. Shanks replied that he had been in there the day before and examined that among other places with a safety test lamp and found no gas. Then for two weeks preceding the 29th of September, 1941, the agent became mine manager while the latter was on his holidays. During this time the mine was under his daily personal supervision and he was responsible for seeing that all the requirements of the Act were carried out. During this time he found 300 feet of gas in the 4th Right Level. During this time eight men left the mine before the end of their shift on account of gas, i.e., six men on September 23rd and two men on September 26th, as shown by the record kept by the lampman. The acting mine manager apparently knew nothing of these matters, because on September 29th, 1941, when meeting the committee of the Union, who were complaining about men leaving on account of gas, he said he was surprised at the complaint. The agent knew then, if he did not know on August 5th, that gas in dangerous quantities was present in the mine. His two weeks as mine manager were then up, but he promptly wrote the letter above quoted to the manager. He told the manager to "get this situation cleaned up immediately". He further said he intended doing away with the auxilliary fans.

Mr. Stewart came back on duty and says he made efforts to improve matters, but at the date of the explosion, one month later, the fans remained and the gas remained. As far as I am able to discover no real improvements in the gas situation were made during October. Herein lies, I think, the only basis for criticism of the conduct of the agent. If he had authority to direct these things to be done, he had authority, and I think a duty, to see that they were carried out. True, only a month elapsed between the order and the explosion, but much could have been done in that time. It was not done and disaster struck.

INSPECTIONS BY OFFICERS OF THE DEPARTMENT OF MINES

The real safety inspectors in a mine are, of course, the firebosses. But the Province, in the interests, I presume, of public safety, appoints inspectors. There are a Chief Inspector of Mines and certain District Inspectors.

It is the duty of an Inspector under the Act to visit every mine in his district as often as his duties permit and the exigencies of the case require. His duties in part are to ascertain whether the provisions of the Act are complied with, and to examine the ventilation and all matters connected with the safety of persons employed in and about the mine. The District Inspector for the district in which the Brazeau Mine is situated is William Grafton Heeley. Mr. Heeley has been connected with mines since he was twelve years of age and has been for twelve years a District Inspector. He appeared to me to be a competent and conscientious official. He has about thirty mines under his jurisdiction and he generally inspects Brazeau Mine five or six times a year. He inspected this mine in 1941 on April 11th, May 28th, August 5th and 6th, and September 16th and 17th. He explains his inspection routine, which need not be given in detail here, but he says he does look at the firebosses' reports to see if anything wrong is reported and particularly to see if gas is reported. He says he usually tests for gas at the working faces. On the May inspection he did not receive any complaint of gas from anyone and he saw no record of gas in any reports.

RIGHT On the August inspection, while testing in the 4th ~~Left~~ Water Level, his safety lamp, when leaving the last clear airway, began to show gas in increasing quantities and went out when half way to the face. This denoted an explosive mixture and he therefore directed that the men be withdrawn, which was done. Mr. Stewart then started in to clear up the gas. Mr. Heeley went back about one and a half hours later but gas was not clearing very much. He suggested changes in the location of the fan and the clearing away of the gas in sections. This was done and next day Mr. Stewart reported that the gas was clearing nicely. As above pointed out, Mr. Heeley says he reported **RIGHT** to Mr. John Shanks concerning the gas found at the 4th ~~Left~~ Water Level and Mr. Shanks said he had been there the day before and had examined that among other places and had found no gas.

Mr. Heeley's last inspection before the explosion was on September 16th and 17th. He followed the usual procedure and found that the reports of the firebosses did not show any gas from the time of the last inspection. He inspected the faces for **RIGHT** and did not find any. He says the working face of the 4th ~~Left~~ Water Level was, to the best of his recollection, 125 to 150 feet ahead of Room 9 where the vent tubing ended. There was no brattice from Room 9 to the face

of the level and no vent tubing beyond Room 9. He does not think this is good practice. He spoke to the mine manager about it and Mr. Stewart said he would extend the tubing and would watch it and see that the men did not run into danger.

On this inspection, Mr. Heeley had to hold examinations for miners' certificates and consequently had to give notice of his visit. There is evidence that advantage was taken of this advance notice of the inspector's visit. Jack Bozak says he always knew when Mr. Heeley was there. He learned mostly from the pitboss who would tell him to get the dirty places brushed out of gas. Bozak further says that one day in September, 1941, Armstrong told him to move the vent tube from Room 36 and place it in the level. Bozak did so and three hours later when Mr. Heeley had passed he moved it back into Room 36.

Westcott says that they knew when Mr. Heeley was coming, and that his visit made considerable change. When they knew Mr. Heeley was coming they went to extra trouble to put the mine in better condition as to gas. He says they would make cross-cuts to clear the air away and brattice was put up. This work was not continued after Mr. Heeley left.

Mr. Minue, who is a fireboss, says that he was always told at midnight when Mr. Heeley was in town. They would then go back and fix up the ventilation. Minue says Armstrong told him to do this. Parker, also a fireboss at the time, says that he knew the night before when Mr. Heeley was going to be in town. He says the ventilation was always made a little better during the night shift. He says he could notice it as being better the next morning. Mr. Heeley, had of course, no suspicion of these preparations.

It is unfortunate that owing to the location of Nordegg and the means of transportation, it is practically impossible for an inspector to keep his arrival from becoming public. But the evidence would indicate that efforts were made to conceal from Mr. Heeley the facts as to the gas situation.

I have already dealt with the untruthfulness of the certificates of the firebosses. Another situation which was strange to me was developed in the evidence. Section 156, Rule 20 (8) of The Mines Act provides that when any person finds fire-damp in dangerous quantities in any mine he shall report to the manager or fireboss and before leaving the mine shall see that a record of the same is made in a book kept at the mine for that purpose. Apparently a book to comply with this section was started in August 1918. On the fly-leaf is entered "Report of Gas other than by Officials". There is not a single word written in the book except the date and signature of the manager. Every week since August 1920, Mr. Stewart has faithfully signed his name and noted the date, except apparently for two weeks in each year when he was on holiday. At intervals the District Inspector has written his name on the margin. Mr. Heeley's name appears in it at intervals for years. It is probable that neither the miners nor anyone else knew anything about it. Then about a year ago, the mine manager had a book installed at the lamp house in which to enter complaints of miners. If a miner came off shift very early the lampman was instructed to find out the cause and enter it in the book (Exhibit 21). It is in this book that some thirteen cases of men leaving on account of gas in two months are entered.

On giving further thought to this I am satisfied that there was no ill design in this matter, but it had unfortunate results. When the inspector came he was shown Exhibit 29, which is the old book that contained no entries and that the miners knew nothing about, but the inspector was not shown Exhibit 21, in which the miners' complaints were entered. As a result, Mr. Heeley's sources of information were subject to at least three infirmities, viz.,-

1. The reports of the firebosses as to there being no gas, were untrue.
2. The mine was to some extent prepared in advance for his inspection.
3. He saw only the book in which no complaints were entered, but did not see the book in which complaints were actually entered.

It is, I suppose, a matter of mere chance that on all these inspections except the August inspection his own tests did not disclose gas. But if firebosses were willing to sign untrue reports as to gas and to prepare the mine in advance for inspection and also to fire shots without inspection - as apparently most, if not all of them, were - then no periodic inspections by an outside inspector could have been of much avail to avert a disaster such as this.

EXPLOSIONS

The only point on which experts seemed to differ was as to the number of explosions. Dr. Gray's opinion was that there was only one explosion, while Dr. Boomer's opinion was that there were two explosions, although he states the evidence for the second explosion is inconclusive. The evidence supporting each theory is quite technical and the judgment of a layman thereon would be of little value. Nor do I think that it really matters much from a practical standpoint. The mine management would probably not care to admit that there existed at the roof of these levels a stratified body of methane gas along which a flame could be carried 1,500 or 2,000 feet to cause a second explosion. Apart from the theory that there was a second explosion and that the flame which ignited the second explosion could only be carried through the medium of a stratum of gas, there is no evidence of any gas along the roof of the levels at that particular time. I may point out that Mr. John McAndrew, the Mine Rescue Superintendent, who has spent all his working life in mines, advances the theory that there were small pockets of gas at intervals in cavities in the roof at the levels. He thinks that each pocket would replenish the flame as it travelled, or in other words, one pocket would ignite the next pocket.

It seems, however, to be agreed that the original explosion took place in the 4th Left Water Level. It cannot be doubted that if a second explosion took place it was a direct result of the original explosion. Whether or not the original explosion caused all the damage directly or caused part of it through the medium of a second explosion does not seem now to be important.

RECOMMENDATIONS

I approach this subject with a sense of the insufficiency of the evidence as a basis for recommendations. With the consent, however, of all counsel concerned in the hearing, I have consulted certain experts such as Dr. E.H. Boomer of the Department of Chemistry of the University of Alberta and Dr. F.W. Gray, Member of the Institute of Mining Engineers, London, and Assistant General Manager of The Dominion Steel and Coal Corporation, Sydney, Nova Scotia.

On the argument before me, Mr. H.R. Milner, K.C., appeared and stated that he represented certain coal companies in the Province, who were not represented at the Inquiry. He suggested that no recommendations applicable to his companies be made without these companies being given a chance to be heard. A letter to the same effect has been received from the Secretary of the Western Canada Bituminous Coal Operators' Association. I have pointed out that the evidence before me related only to Brazeau Collieries and that the only recommendations I can make would be with respect to matters based upon or arising out of that evidence.

1. ABOLITION OF EXPLOSIVES.

The first recommendation is that in conditions such as existed in Brazeau Collieries prior to the explosion, shot-firing or the use of explosives should not be permitted. I understand that coal-cutters have been installed and that since the explosion there has been no shot-firing. This seems to be a very desirable change and should either be made permanent or continued until the Department of Mines is satisfied that in all the circumstances shot-firing may safely be resumed.

2. LAW ENFORCEMENT

In the first place it seems to me that The Mines Act, while it is not and can never be perfect in a changing world, is nevertheless a reasonable and sufficient code. But no statute can be of any value unless its provisions are obeyed or, in the alternative, enforced. The extent to which the safety provisions of The Mines Act have been disregarded, has been pointed out above. Three major forces only are available for law enforcement:

- (a) Education.
- (b) Imposition of penalties by private individuals, such as discharge of an employee.
- (c) Imposition of penalties by the state.

Much has been done and may still be done by education. Surely the manager, pitbosses and firebosses of a mine can be impressed with the fact that obedience to law is a primary duty. At the same time I should point out that no mine official should be put in a position in which obedience to law endangers his job or injures his reputation for efficiency. No superior officer who permits this to happen to his subordinates should be retained in his position.

In a clear and flagrant case of breach of the provisions relating to safety, proceedings should promptly be taken to exact the penalties provided in the Act.

Then, I think the miners individually can do much to enforce the law, firstly by not encouraging firebosses to break the law in order to get more speed, and secondly by letting the officers concerned know that they disapprove of acts in violation of law.

3. INSPECTION.

Several matters in this connection occur at once even to a layman like myself:

- (a) It is unfortunate, as already pointed out, that an inspector cannot always prevent advance notice of his coming. He should, however, take all reasonable means to prevent news of his coming reaching the mine. When he arrives, he should in my opinion, even at much inconvenience, at once enter the mine and test for gas and make other inspections as to things which might be the subject matter of "preparation" for inspection. The men might not then be on shift, but the inspector could come in later and see the men at work and the mine in operation in a normal way. He should not be compelled to make certain routine inspections and then hurry away. For example, shot-firing is probably the most dangerous single operation in a mine in connection with gas, yet the manager never sees it done and there is no evidence that an inspector is ever present. I am, of course, assuming that an inspector could arrange to see it done in the customary way in which shots are fired.
- (b) But it is clear even to me that widely separated inspections, no matter how perfectly they may be conducted, are not of much use as far as gas is concerned except perhaps as a general warning of the existence of gas. The evidence is that the location of gas concentrations varies. A gas concentration may be found in one place today and in another place tomorrow. It may be collecting in one place while it is being dissipated in another place. For example, Mr. Heeley found gas in explosive quantities in a certain place in the mine on August 5th. He acted with characteristic promptness. He withdrew the men and had the gas cleared. But what if gas again appeared, as it readily might, the day after Mr. Heeley left or at any future day when he was not there? Apart from a proper ventilation system which carries a sufficient current of air to every working place, it seems to me that the overriding safety measure is that no shot shall be fired in this mine unless and until the contiguous places have been inspected for gas immediately before the shot is fired. This provision should be rigidly enforced.

In the Report of a Royal Commission on Safety in Coal Mines in England in December 1938, it was said on this subject:

"It has been pointed out over and over again in the annual reports of Mines Inspectors that there could be few if any accidents from the use of explosives, whether from ignitions of fire-damp or other causes if the requirements of the Explosives in Coal Mines Order were strictly observed, and that the occurrence of accidents is in itself prima facie evidence of some breach of the order."

This order also contains the language above quoted, which

I suggest should be inserted in Section 139 (16).

It was suggested that a resident inspector might be appointed who would be concerned wholly with matters of safety. This matter is dealt with in a general way below. I am not sufficiently informed as to whether these duties would fully occupy his time, but the Department might, if it sees fit, appoint experimentally a resident inspector at Nordëgg, if and when shot-firing is resumed.

As to inspection generally, I can only repeat that no inspector should be pressed for time in making an inspection. If necessary, more inspectors should be appointed.

4. Some question has arisen as to the meaning of Section 139 (16) of The Mines Act. Although I have put upon the language of the section the meaning above pointed out, yet it would, I think, be advisable to make the meaning clear, using if thought advisable the language of the English Order above mentioned.
5. If a complaint book, as provided in Section 156, Rule 20 (8) is to be of any value to miners, it must be conveniently placed, open, upon a stand where the person wishing to record a complaint can go to it, without inconvenience and make his entry. Miners should all be fully advised as to the purpose and location of the book. The lamp house would seem to be the proper place for it because the miners have to go there when going off shift. Then I think the book, Exhibit 21, which Mr. Stewart initiated should be continued. Miners, like other people, are often unwilling to make a public entry of a complaint, but if asked by a person such as the lampman they will usually state their complaints. These should be entered in a book and the book should be produced to the inspector.
6. Another matter perhaps of not great importance was disclosed in the evidence and is perhaps rather a matter of mine management than of statutory regulation. As matters stand, each fireboss coming on duty has to take the report of his predecessor as to conditions in the mine. These reports are partly in writing and partly verbal. The written reports in this case were untrue and misleading. The verbal reports may be fragmentary and incomplete or they may be misunderstood or misstated. One wonders why an oncoming fireboss should be compelled to depend upon the reports of the outgoing fireboss. It seems to me that it could be arranged that the oncoming fireboss could come on duty, say two hours before the new shift began. He could, during that two hours, learn of the conditions in the mine by his own observations and without dependence upon others. He would then, of course, go off duty two hours before the new shift came on. If such a plan is feasible in actual working, it seems to me to have much merit.
7. I now come to the difficult problem of the appointment of firebosses. On the hearing it was evident that not only the firebosses but the miners were strongly in favor of having the firebosses appointed and paid by

the Province. Since the conclusion of the hearing, a petition to the same effect signed by nine firebosses at Nordegg has been forwarded to me. I am forwarding this petition with my report.

This problem is not easy nor is it in any sense new. In England, firebosses are known by various names in different districts, such as "firemen", "examiners" and "deputies". In this report they may all be understood as meaning "firebosses". With this problem is closely connected the matter of the duties to be assigned to the firebosses. This also is an old problem. I have read the Report of the Royal Commission on Safety in Coal Mines submitted to the British Parliament in December 1938. It is a lengthy document of some five hundred pages, but it is a carefully considered report and is both interesting and illuminating. On the questions now being considered, I feel at liberty to quote at some length from it. Speaking of firebosses generally, the report says at Page 180:

"They are, as it were, the non-commissioned officers of the mine; it is on them that falls the immediate responsibility for seeing that many of the requirements of the law are observed and that discipline is maintained, and it is mainly through them that most of the instructions of the management in regard to safety are carried out. They form the chief connecting link between the workmen and the senior officials of the mine, and their principal duty is to see to the safety of the districts of the mine assigned to them. Their influence on accident-prevention-both actual and potential - is therefore far-reaching in its effect."

Before 1911 there were no restrictions on the non-safety duties which might be assigned to a fireboss. In 1909 a Royal Commission reported somewhat hesitatingly that "we are of the opinion that where practicable the firemen (i.e. the firebosses) should be able to give their whole time and attention to duties immediately concerned with the safety of the workmen under their charge." In The Coal Mines Act of 1911, Parliament, acting doubtless on this report, enacted certain provisions from which Section 66 of our Mines Act is taken. In effect the provision is that the fireboss shall devote his whole time to his inspection duties, provided that the duties assigned to him in addition to his inspection duties shall not be such as to prevent him carrying out his inspection duties in a thorough manner. This provision shall not, however, prevent him from measuring work done or firing shots.

Concerning this provision, the Commission in 1938 says at Page 183:

"The evidence we heard makes it clear that in those parts of the country where the deputy is required to devote the whole of his time to his statutory duties there is serious and increasing difficulty in reconciling the requirements of the law with the exigencies of practical mining, especially in mines where the successful application of intensive mechanization depends on the uninterrupted regularity

of the cycle of operations. The difficulty is likely to become still more pronounced with the further extension of mechanization and must be honestly faced as one of the problems of modern practice."

Mr. W.J. Charlton who is a Divisional Inspector of Mines, said to the Commission that "he did not think it was a practical proposition for a deputy to confine himself to safety matters".

Mr. Frowen, who represented the Deputies' Federation before the Commission admitted "that the safety and output of a mine cannot be divorced, that in general the most efficient method of production is the safest and that an attempt to divide the work into watertight compartments under separate supervision must inevitably result in a clash of interests between them". Mr. Reis, President of the National Association of Colliery Officials thought it impracticable to appoint a special output official covering the same district but dealing only with output duties. Mr. Frowen did, however, protest against what he described as "the harassing effect of the pressure exercised on deputies by officials concerned mainly with output". This is the same complaint which was voiced on the hearing here. It is true that no witness complained of any specific individual pressure either by act or word. But pressure may be, and I think often is, the result of conditions and circumstances. One fireboss said that firebosses were "coal hustlers". Another said that a fireboss had to serve two masters, viz., The Mines Act and the mine management. I have no doubt that there is a substantial basis for these complaints. When "output" and "law" clash it is the emphatic duty of everyone concerned to see that the law prevails.

It is true that conditions in England may differ somewhat from conditions here but I think these differences must be superficial. I cannot think they are fundamental. In any case, the experience of many decades of coal mining in Great Britain as interpreted by the best minds in that industry cannot be lightly disregarded. This applies especially to the opinion of Mr. Frowen, representing a Deputies' Federation consisting of about 18,000 firebosses. In view of the evidence as I see it and in view of the opinions above expressed, I cannot now recommend any change in the Act in this regard. I do hope, however, that the recommendation which I am about to make in connection with the other branch of this matter will give some needed relief to the firebosses.

Dealing next with the view that firebosses should be employees of the Province and should be paid by the Province. This policy is strongly pressed by the firebosses and is strongly supported by the miners. It is a matter which should be carefully considered. A similar proposal was put before the Royal Commission on the Coal Industry in 1925 by the Deputies' Federation. The scheme was rejected by the Commission and a little later was abandoned by the deputies in favor of a scheme which gave to a deputy who thought he had been unjustly dismissed a right of appeal. In connection with these matters I cannot do better than quote the statements of the 1938 Commission to be found at Page 204:

"At ~~one~~ time the representatives of the Deputies' Federation held that the difficulties in question might be resolved by State employment, in which case their appointment and dismissal would no longer be in the hands of the mine management. This proposal was put to the Royal Commission on the Coal Industry (1925), who rejected it on the ground that the personal responsibility of the colliery manager should remain the corner-stone of the safety regulations, and that the division of responsibility between him and a class of independent deputies would be a step in the wrong direction. We feel no need to emphasize the soundness of this ruling, for the Federation itself, though it continued for some years after 1925 to press the case for State employment, has clearly recognized its impracticability in the present organization of the industry, and has dropped it in favor of the establishment of Boards of Appeal. The Federation's present scheme is set out in paragraph 14 of the Memorandum of Evidence which was submitted for our consideration; it provides in essence that a deputy who feels himself to have been unjustly dismissed may appeal to the divisional inspector, who shall appoint a court to inquire into the case, and shall decide, on receiving the court's report, whether or not the deputy is to be reinstated and, if he is, what is to be done about his loss of wages during the period of appeal and inquiry. It appears that the representatives of the deputies rely on the moral effect of the existence of such machinery rather than on the expectation that its aid would often be invoked. The scheme was supported by the Mineworkers' Federation." The scheme outlined in the above citation was opposed by the National Association of Colliery Managers on the ground that the manager would be put in an intolerable position if his dismissal of a fireboss on account of incompetency could be questioned or reversed. It was said that such a result would be incompatible with the manager's statutory responsibilities. It was further urged that such a policy would have a detrimental effect on discipline which would be prejudicial to safety. The Commission saw a great deal of substance in these objections, but also stated its belief that "the establishment of some conciliation arrangements between deputies and owners would provide the ultimate solution of this problem".

I am unable to go so far as to recommend the adoption of a scheme whereby the mine owner and the mine management would be relieved of all responsibility for safety in the mine which they operate, and whereby sole responsibility for safety in a mine would be placed upon a Department of State far removed from the scene of actual operations. On the other hand, I am impressed by the proposal above referred to, which was put before the 1925 Commission by the firebosses and which had the powerful support of the Mineworkers' Federation. The 1938 Commission did recommend a scheme for investigating dismissals but the scheme applied only to dismissals resulting from "the way in which the fireboss carried out his safety duties". This limitation would in my opinion, be a fatal weakness in the whole scheme as it would operate in this country. The words "the way in which the fireboss carried out his safety duties" are applicable to two quite different situations, that is to say:

- (a) These words may apply to a case where a fireboss on his own initiative disobeys the safety provisions of The Mines Act.
- (b) These words may also apply to a case where a fireboss, although pressed by the management to disregard safety regulations in order to facilitate output, refuses to do so.

The first situation, if proven, furnishes a legitimate ground for dismissal. But in the second situation - which is the situation complained of here - the fireboss might be dismissed because he refused to disobey the law. This is a situation which the Commission in England did not contemplate, doubtless because it does not occur there. If a fireboss is dismissed for refusing to disobey the law, the real reason will not, of course, be given, but some other excuse, or no reason at all will be given, in which case the suggested Board would have no jurisdiction

This scheme, if adopted here, should, in my opinion, be adopted without the limitation above referred to. If any fireboss is discharged either with or without reasons being given, he should have, in every case, a right of appeal either to the Chief Inspector or to a Board of which the Chief Inspector is Chairman. As the decision to be given is final and binding, I would suggest a Board. It need not be a permanent Board, but could be selected by the Department as each case arises - particularly if, as I think, the number of cases will be few. One member might be in some sense representative of the firebosses and the other representative of the mine owners. The procedural details can be worked out. In the interests of all parties the inquiry should be a private one.

If the objection which was raised before the British Commission is raised here, namely that it is contrary to law and practice to compel an employer to continue in his employ an employee to whom he objects, then one answer is that the alternative proposal is much more drastic. If firebosses are appointed by the State then the employer has in his mine and among his mine workers a number of officials in whose appointment he has no say and over whom he can exercise no control. This scheme seems to me to have much merit and I recommend it to the consideration of the proper authorities.

At the same time, I would like to say to the management and the firebosses, that I see no reason why differences between management and firebosses should not be settled in the way that disputes between management and miners are now settled. Machinery for settlement of the latter disputes has long been in existence and is in a general way working satisfactorily. I see no reason why similar machinery should not be set up for settling differences between firebosses and management. These difficulties would then be settled within the industry itself by discussion, by conciliation and reasonable compromise. Indeed, I think it is not too much to hope that in time most of these and similar problems will settle themselves in a higher sense of individual duty and in a broader conception of what is right.

In conclusion, I would like to pay my humble tribute to the mine rescue squad and to those who worked with them. To enter a mine, almost immediately after it has been torn by a terrific explosion, and to crawl over great piles of wreckage, knowing that deadly methane or carbon monoxide gas or debris falling from the shattered roof may at any moment snuff out their lives, requires courage of the highest order.

Lastly, I would like to express my appreciation of the efforts of all Counsel engaged in the difficult work of the Commission. They all laid aside that narrow partizanship which is too often associated with advocacy and did everything in their power to assist in arriving at the truth. If I have gone astray the fault has not been theirs. I am taking the liberty of forwarding herewith a memorandum submitted to me by Dr. Boomer and also one submitted to me by Dr. Gray.

I beg to enclose with this Report:

1. The evidence taken on the inquiry.
2. The exhibits files on the inquiry.
3. The memorandum submitted to me by Dr. Boomer.
4. The memorandum submitted by Dr. Gray.
5. The petition filed by the Nordegg fire-bosses.
6. My Commission.
7. Memorandum of my expenses.

All of which is respectfully submitted,

A.F. EWING
Commissioner.

BRAZEAU COLLIERIES LTD.

Nº 3 MINE

4th. LEFT LEVEL DISTRICT

~~SCALE: 1" = 100 Feet~~

- LEGEND

Position of bodies shown thus	x
Position of dead horses	o
Caves shown thus	o
Mine cars shown thus	□

CA2ALZ1
1941



C5678